



Student Details

First Name

[_____]

Last Name

[_____]

Teacher's Name

[_____]

HOME LEARNING PACK

TERM 5

YEAR 8

Learning Objective:	Median
	To be able to find the median in a set of numbers

Do NOW Activity:

- Estimate** $55553 \div 124$
- Work out** $\frac{1}{9} \times \frac{3}{5}$
- Work out** $\text{£}291.25 \div 5$
- Expand** $5(6x - 5)$
- Express** 2% as a fraction in its lowest form

PRIOR KNOWLEDGE CHECK:
To be able to put numbers in numerical order and divide by two

THE MAIN EVENT

WORKED EXAMPLE #1:

The median is simply the middle number. To find the median in a set of numbers you have to place in numerical order. (lowest to highest) it is then the middle number.

E.g. 12, 7, 5, 4, 2, 15, 20, 21,

~~2~~, ~~4~~, ~~5~~, **7**, ~~12~~, ~~20~~, ~~21~~,

If there are two numbers in the middle you add them together and divide by 2. The median is the answer of this calculation

E.g. $8 + 7 = 15$ $15/2 = 7.5$

PRACTICE #1:

- Two students had size 4 shoes, 4 students had size 5, 3 students had size 6, 1 student had size 7 and one student had size 9. What was the median shoe size?
- Four students counted their money. Abi had £10, Evan had £6.40, Lauren had £8.10 and Mary had £9.20. What was the median amount?
- Peter, Millie and Joe had 3 PS4 games while Alan had 2, Michael 6 and John 4. What was the median amount of games?
- What is the median value of the first 9 odd numbers?

WORKED EXAMPLE #2:

I need to find out what is in the middle of 5 and 6

Cross off the numbers from each end



The **median** is 5.5 because it is the **middle** number

PRACTICE #2:

1. What is the median value of the first 10 even numbers?
2. What is the median value of the first 5 prime numbers? (hint start at 2)
3. What is the median value of the first 8 prime numbers?
4. Fred had 5 sweets, Julie had twice as many as Sally, Jo had 4 sweets and Sally had one less. What was the median value of sweets?

PRACTICE #3:

Simone orders a list of number to find the range, her orders list is -1, -8, -10 -20, 23, 30, 31. She says the median is -20, explain her mistake.

PRACTICE #4:

Find the median from these sets of numbers

8, 12, 1, 7, 14, 56

2.5, 4.5, 1.5, 10.5, 3.5

1.1, 0.9, 0.23, 0.06, 1.32

Learning Objective:	Mean
	To understand how we work out the mean when dealing with averages

Do NOW Activity:

- 1 **Work out** $\pounds 125.99 + \pounds 19.99$
- 2 **Evaluate** 10^5
- 3 **Solve** $5(2x + 5) = -15$
- 4 **Round** 0.928 correct to 1 significant figure
- 5 **Work out** $-5 + 12$

PRIOR KNOWLEDGE CHECK: To be able to apply addition and division

THE MAIN EVENT

WORKED EXAMPLE #1:

To work out the mean we have to do the following

The **mean** is the total of the numbers divided by how many numbers there are. To **find the mean**, add all the numbers together then divide by the number of numbers

E.g.

4 people have the following number of counters: 4, 6, 3, 7. If we were to share the counters equally between them, how many would they get each?

$$4 + 6 + 3 + 7 = 20$$

$$20/4 = 5$$

PRACTICE #1:

A) Find the mean of the following sets of data:

(Add them all up and divide by how many there are)

8, 3, 52, 48, 7, 78

8, 9, 12, 15, 21, 22

24, 27, 21, 25, 28

B) The temperature for UK on a holiday website is found by taking the mean average from 8 different parts of the country. What should they put up if the temperature in the 8 locations are: 12°C 18°C 9°C 12°C 15°C 20°C 21°C 13°C

WORKED EXAMPLE #2:

6 friends are going on holiday and it works out to be £120 each. 1 of them is the birthday boy so his friends decide to cover his cost. How much do all 5 friends need to pay each now?

Total cost: $£120 \times 6 = £720$

Each need to pay $£720/5 = £144$

PRACTICE #2:

Sarah is studying for her GCSEs and has a part-time job. By law, she can only work 16 hours a week over the course of a four week period. These are her total hours worked from the last four weeks: 17hrs, 25hrs, 8 hrs and 14hrs. Has she gone over the limit?

PRACTICE #3:

Tickets to the cinema cost £6 each. 5 Friends go and they have the following amounts of money each; £3 £8 £6 £4 £3 Do they have enough money between them to go to the cinema? (Show your working)

PRACTICE #4:

1. Timothy's average score on the first 4 tests was 76. On the next 5 tests his average score was 85. What was his average score on all 9 tests?

Learning Objective:	Finding the mean
	To find the mean from a frequency table

Do NOW Activity:

- 1 **Estimate** 8709×406
- 2 **Work out** $\frac{2}{7} \times \frac{3}{8}$
- 3 **Work out** $\text{£}265.50 \div 9$
- 4 **Expand** $2x(x + 1)$
- 5 **Express** 84% as a fraction in its lowest form

PRIOR KNOWLEDGE CHECK: Multiplication and division

THE MAIN EVENT

WORKED EXAMPLE #1: A team play **20** games, the coach records the number of goals they score in each game in a frequency table

Number of Goals	Frequency
0	5
1	6
2	4
3	3
4	2

$0 \times 5 = 0$

$1 \times 6 = 6$

$2 \times 4 = 8$

$3 \times 3 = 9$

$4 \times 2 = 8$

Mean goals = $\frac{\text{Total goals}}{\text{Total games}}$
 Mean goals = $\frac{31}{20}$
 = 1.55

Total goals = **31**

PRACTICE #1:

A class has **30** pupils, the teacher asks them all how many siblings they have and records the information in a frequency table

We need to find the total number of siblings

Number of Siblings	Frequency
0	1
1	10
2	10
3	6
4	3

WORKED EXAMPLE #2:

A class plants some seeds, after 2 months they measure the height of their flowers, here are the results.

We need to find the total height of all plants, but we don't know exactly how big they are, we need to estimate the height using the midpoint of each group.

Height of plant	Frequency	Midpoint (estimate of the height)
0-4cm	2	
5cm-9cm	4	
10cm-14cm	3	
15cm-19cm	1	
20cm-24cm	2	

$$2 \times 2 = 0$$

$$4 \times 7 = 28$$

$$3 \times 12 = 36$$

$$1 \times 17 = 17$$

$$2 \times 22 = 44$$

$$\text{Total height} = 125$$

Mean height = $\frac{\text{Total height}}{\text{Total number of plants}}$

$$\text{Mean height} = 125/12$$

$$= 10.4 \text{ (1dp)}$$

PRACTICE #2:

1. Look at the table below. It shows how many siblings (brothers or sisters) the pupils in

Number of Siblings	Frequency
0	5
1	4
2	7
3	2

- How many people were asked?
- Altogether how many siblings are there?
- What is the mean number of siblings?

2. The table below show how many sweets students in a year 7 class had in their pockets.

PRACTICE #3:

2. The table below show how many sweets students in a year 7 class had in their pockets.

Find the mean

Number of sweets	Frequency
0	10
1	12
2	5
3	2
4	1

WORKED EXAMPLE #2:

Range (The difference)

Find the difference between the biggest and the smallest number.

E.G: 1 ,4 ,4 ,4 ,2 ,9 ,4

The biggest number is 9 and the smallest number is 1. Calculate: $9 - 1 = 8$

The **Range is 8.**

PRACTICE #2:

Range (The difference)

Find the Range:-

9,10,8,4,3

9,2,1,3,1

4,7,8,1,3

1,1,2,4,5

8,7,6,5,4,3,2

10,4,7,2,3

PRACTICE #3:

Write 5 numbers so that the mean is 6, the median is 5 and the mode is 4

Write 5 numbers so that the mean, median, mode and range are all 4



PRACTICE #4: Find the missing numbers in these sets of data

The mean of 3 5 6 and _____ is 6

The mean of 7 8 4 and _____ is 8